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10/785,458	02/23/2004	Hans Henrik Bostrom	CISCP586/364087	8563
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EXAMINER				
NG, CHRISTINE Y				
ART UNIT		PAPER NUMBER		
2464				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@wavsip.com

Office Action Summary

Application No.

10/785,458

Applicant(s)

BOSTROM ET AL.

Examiner

CHRISTINE NG

Art Unit

2464

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/5508)
- Paper No(s)/Mail Date 8/17/09
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-29 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1, 15, 29 and 32 are rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent No. 6,665,301 to Wu.

Referring to claims 1, 15 and 29, Wu discloses a method of providing data transmission across a public computer network (Figure 1, public network 20), the method comprising:

Creating a plurality of tunnels (Figure 3, tunnels 116) across the public computer network, the plurality of tunnels including a tunnel for each link in a link aggregation (Figure 3, transmission link 106 is divided into a plurality of virtual tunnels 116; Column 6, lines 50-67), said link aggregation capable of simultaneously supporting a plurality of transmission protocols (Figure 1, nodes 30-38 are multiprotocol elements, Column 3, line 64 to Column 4, line 1 and Column 4, line 42; ATM also supports different transmission protocols such as CBR, VBR, ARB and UBR traffic, Column 1, line 61 to Column 2, line 15 and Column 5, line 54 to Column 6, line 7).

Connecting a first computer at a first private network (computer at private network 22) with a second computer at a second private network (computer at private network 24), the connection made via the tunnels created across the public network.

Transmitting packets end-to-end from the first computer to the second computer in a manner characterized that data is transmitted from the first computer to the second computer without terminating the connection from the first computer to the second computer at a switch (Figure 1, node 32) at an inbound edge of the public computer network, the packets conforming to protocols in the plurality of transmission protocols. As shown in Figure 1, tunnels such as tunnel 50 is formed from node 30 in private network 22 across public network 20 to node 38 in private network 24 via nodes 32-36. Data is transmitted from node 30 to node 38 without terminating the connection at node 32, which is located at an inbound edge of public network 20. The connection is not terminated because a tunnel is formed from node 30 to node 38 and data needs to be transmitted across the tunnel, which includes data transmission from node 30 to node 32 using the tunnel. Refer to Column 3, line 25 to Column 6, line 67.

Referring to claim 32, Wu discloses a method of providing data transmission across a public computer network, the method comprising:

Receiving, at a switch (Figure 1, node 32) at an inbound edge of the public computer network (Figure 1, public network 20), packets from a plurality of links (Figure 3, tunnels 116) between the switch and a first computer located at a first private computer network (computer at private network 22), wherein the links comprise a link aggregation (Figure 3, transmission link 106).

Creating a plurality of tunnels (Figure 3, tunnels 116) across the public computer network.

Assigning each of the plurality of links a tunnel from among the plurality of tunnels.

Transmitting the packets from the first computer to a second computer at a second private network (Figure 1, computer at private network 24), a connection made between the first computer and the second computer across the public computer network via the created tunnels.

Wherein the packets are transmitted from the first computer to the second computer without terminating the connection from the first computer to the second computer at the switch at the inbound edge of the public computer network, such that a point to point connection is established between the first computer and the second computer for each link of the link aggregation. Refer to the rejection of claims 1, 15 and 29.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,665,301 to Wu in view of U.S. Patent No. 6,910,149 to Perloff et al.

Wu does not disclose wherein the plurality of transmission protocols comprises LACP protocol, and packets are transmitted in accordance with the LACP protocol to perform Ethernet loadsharing across multiple links.

Perloff et al disclose that the LACP protocol defines standards on how links in link aggregation can load share and load balance, and how to provide for automatic redundancy in case of link failure. Refer to Column 1, line 55 to Column 2, line 41; and Column 5, lines 42-67. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the plurality of transmission protocols comprises LACP protocol, and packets are transmitted in accordance with the LACP protocol to perform Ethernet loadsharing across multiple links. One would have been motivated to do so to provide a protocol to control the load sharing and load balancing of link in link aggregation.

6. Claims 3, 4, 17 and 18 are rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 6,665,301 to Wu in view of U.S. Patent No. 7,061,875 to Portolani et al.

Referring to claims 3 and 17, Wu does not disclose wherein the plurality of transmission protocols comprises PAgP protocol, and packets are transmitted in accordance with the PAgP protocol to perform Ethernet loadsharing across multiple links.

Portolani et al disclose that the PAgP protocol aggregates a plurality of physical ports into a single, logical aggregation port. This allows for load sharing as different ports can share the transmission and reception of data since they are one logical port.

Refer to Column 12, lines 13-32. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the plurality of transmission protocols comprises PAgP protocol, and packets are transmitted in accordance with the PAgP protocol to perform Ethernet loadsharing across multiple links. One would have been motivated to do so to load balance data among different ports, which prevents congestion and overflow on one particular port.

Referring to claims 4 and 18, Wu does not disclose wherein the plurality of transmission protocols comprises UDLD protocol, and packets are transmitted in accordance with the UDLD protocol to perform unidirectional link detection.

Portolani et al disclose that the UDLD protocol determines the physical status of a link by detecting the identities of neighbors and shutting down misconnected ports. UDLD prevents physical and logical unidirectional connections. Refer to Column 12 lines 33-46. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the plurality of transmission protocols comprises UDLD protocol, and packets are transmitted in accordance with the UDLD protocol to perform unidirectional link detection. One would have been motivated to do so in order to detect unidirectional connections.

7. Claims 5 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,665,301 to Wu in view of U.S. Publication No. 2006/0067317 to Engstrand et al.

Alexander Jr. et al do not disclose wherein a unique ISP access VLAN is assigned to each connection between corresponding link aggregation ports.

Engstrand et al disclose that each VLAN is assigned a VLAN identifier or VLAN tag for uniquely identifying the VLAN within a LAN. Also, a VLAN can be connected to an ISP. The same address of an ISP is used for a plurality of connections that are connected to that ISP. Refer to Sections 0002 and 0012. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein a unique ISP access VLAN is assigned to each connection between corresponding link aggregation ports. One would have been motivated to do so to unique identify each connection.

8. Claims 6-8, 12-14, 20-22 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,665,301 to Wu in view of U.S. Patent No. 6,501,749 to Alexander Jr. et al.

Referring to claims 6 and 20, Wu does not disclose monitoring the computer network to detect multipoint protocol tunneling.

Alexander Jr. et al disclose in Figures 1 and 2 a system wherein computers 26,28,30 are connected to computers 32,34,36 via a link aggregation 20 of k links 40 using switches 22 and 24, wherein the k links can be used with a plurality of networking protocols. Refer to Column 3, line 37 to Column 4, line 9. As shown in Figure 4, link aggregation 403 in switch 401 prevents multi-destination data frames from being sent on the wrong links 408-411 by determining whether the address of the data frame matches the physical interface of the link. Refer to Column 4, line 24 to Column 5, line 18. The claim does not specifically define multipoint protocol tunneling, so this process reads on multipoint protocol tunneling, since the process determines which links to send

multi-destination data frames through. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include monitoring the computer network to detect multipoint protocol tunneling. One would have been motivated to do so to ensure that packets are sent to correct destinations.

Referring to claims 7 and 21, Wu does not disclose wherein the monitoring is performed on a per-interface basis.

Anderson Jr. et al disclose in Figures 4 and 5 that monitoring is performed on a per-interface basis (per link aggregation 403). The link aggregation 403 determines which link 408-411 to send data through depending on the address of the data frame. Refer to Column 4, line 46 to Column 5, line 18. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the monitoring is performed on a per-interface basis. One would have been motivated to do so to ensure that packets on each interface are sent to correct destinations.

Referring to claims 8 and 22, Wu does not disclose wherein the monitoring is performed by examining a source media access control address on a transmitted protocol data unit.

Anderson Jr. et al disclose in Figures 4 and 5 that monitoring is performed by examining a source MAC address on a transmitted PDU. Refer to Column 2, lines 30-40; and Column 4, lines 59-67. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein the monitoring is performed by examining a source media access control address on a

transmitted protocol data unit. One would have been motivated to do so to ensure that packets from different sources are sent to correct destinations.

Referring to claims 12 and 26, Wu does not disclose wherein a report is generated upon detection of multipoint protocol tunneling.

Anderson Jr. et al disclose in Figures 4 and 5 that a report (result of trunk group distribution algorithm) is generated upon detection of multipoint protocol tunneling. The link aggregation 403 runs a trunk group distribution algorithm to determine through which link 408-411 to send data through. Refer to Column 4, line 46 to Column 5, line 18. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein a report is generated upon detection of multipoint protocol tunneling. One would have been motivated to do so to ensure that packets are sent to correct destinations.

Referring to claims 13 and 27, Wu does not disclose wherein multipoint protocol tunneling is performed on a per-protocol basis.

Anderson Jr. et al disclose in Figures 4 and 5 that multipoint protocol tunneling is performed on a per-protocol basis. The links in a link aggregation may be utilized with a plurality of networking protocols (Column 4, lines 6-9). Therefore, if each link in the link aggregation 403 utilizes a different protocol, multipoint protocol tunneling is performed on a per-protocol basis, since the link aggregation 403 determines which link 408-411 to send data through depending on the address of the data frame. Refer to Column 4, line 46 to Column 5, line 18. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein multipoint protocol

tunneling is performed on a per-protocol basis. One would have been motivated to do so to ensure that packets of different protocols are sent to correct destinations.

Referring to claims 14 and 28, Wu does not disclose wherein multipoint protocol tunneling is performed on a per-port basis.

Anderson Jr. et al discloses in Figures 4 and 5 that multipoint protocol tunneling is performed on a per-port basis (per link 408-411 in link aggregation 403). The link aggregation 403 determines which link 408-411 to send data through depending on the address of the data frame. Refer to Column 4, line 46 to Column 5, line 18. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein multipoint protocol tunneling is performed on a per-port basis. One would have been motivated to do so to ensure that packets on each port are sent to correct destinations.

9. Claims 9-11 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,665,301 to Wu in view of U.S. Patent No. 6,501,749 to Alexander Jr. et al, and in further view of U.S. Patent No. 5,081,621 to Sugimoto.

Referring to claims 9 and 23, Wu does not disclose wherein the source media access control address is recorded as a multipoint protocol tunneling reference. Refer to the rejection of claims 6 and 20 and the rejection of claims 8 and 22.

Wu also does not disclose an aging timer is set to a minimum time that is longer than a longest expected transmission time for the transmitted protocol data unit.

Sugimoto discloses in Figure 3 a system with monitoring timers 14-1 to 14-4 which have a slightly longer timing than a transmission time in a maximum transmission route in the network for packets. Refer to Column 5, lines 7-10. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an aging timer is set to a minimum time that is longer than a longest expected transmission time for the transmitted protocol data unit. One would have been motivated to do so in order to set the timer to account for the data unit requiring the longest transmission time.

Referring to claims 10 and 24, Wu does not disclose wherein, before expiration of the aging timer, all packets arriving with a source media access control address other than the reference are dropped.

Sugimoto discloses in Figure 3 a system with monitoring timers 14-1 to 14-4 which have a slightly longer timing than a transmission time in a maximum transmission route in the network for packets. Refer to Column 5, lines 7-10. Although Sugimoto do not specifically disclose dropping packets with a different address before expiration of the timer, by setting the timers 14-1 to 14-4 to a time longer than the maximum transmission time, this allows the packet with the expected address to be received. All other packets with addresses other than the expected address can be dropped. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein, before expiration of the aging timer, all packets arriving with a source media access control address other than the reference are

dropped. One would have been motivated to do so to allow time for particular packets to be received.

Referring to claims 11 and 25, Wu does not disclose wherein, after expiration of the aging timer, the first packet arriving after expiration of the aging timer provides its source media access control address as the next multipoint protocol tunneling reference.

Sugimoto discloses in Figure 3 a system with monitoring timers 14-1 to 14-4 which have a slightly longer timing than a transmission time in a maximum transmission route in the network for packets. Refer to Column 5, lines 7-10. Although Sugimoto do not specifically disclose that the first packet arriving after expiration of the aging timer provides its source media access control address as the next multipoint protocol tunneling reference, by setting the timers 14-1 to 14-4 to a time longer than the maximum transmission time, this allows the packet with the expected address to be received. After the packet with the expected address is received, the system can await for a packet with a new address. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein, after expiration of the aging timer, the first packet arriving after expiration of the aging timer provides its source media access control address as the next multipoint protocol tunneling reference. One would have been motivated to do so to allow time for particular packets to be received and then receive other packets.

10. Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,665,301 to Wu in view of U.S. Patent No. 7,519,056 to Ishwar et al.

Wu does not disclose wherein said plurality of tunnels is formed in part by adding an outer VLAN tag to each packet at the inbound edge of the public computer network and removing the outer VLAN tag at an outbound edge of the public computer network, the outer VLAN tag corresponding to a tunnel.

Ishwar et al disclose in Figures 7 and 8 that an original Ethernet packet 724 is encapsulated with a label stack 726 with a tunnel label for transmission over VLAN 806. Refer to Column 7, lines 20-63. The label stack 726 and outer packet header 728 is removed at SPED 804 after transmission across the network. Refer to Column 4, line 50 to Column 5, line 10. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include wherein said plurality of tunnels is formed in part by adding an outer VLAN tag to each packet at the inbound edge of the public computer network and removing the outer VLAN tag at an outbound edge of the public computer network, the outer VLAN tag corresponding to a tunnel. One would have been motivated to do so to transmit the packet across the public network using a designated tunnel as identified by the outer VLAN tag.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTINE NG whose telephone number is (571)272-3124. The examiner can normally be reached on M-F; 8:00 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2464

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C. Ng

November 19, 2009

/Ricky Ngo/

Supervisory Patent Examiner, Art Unit 2464